employees to reach safety in the event they fall into the water.

[61 FR 26352, May 24, 1996, as amended at 67 FR 44543, July 3, 2002]

§ 1915.159 Personal fall arrest systems (PFAS).

The criteria of this section apply to PFAS and their use. Effective January 1, 1998, body belts and non-locking snaphooks are not acceptable as part of a personal fall arrest system.

(a) *Criteria for connectors and anchorages.* (1) Connectors shall be made of drop forged, pressed, or formed steel or shall be made of materials with equivalent strength.

(2) Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to the interfacing parts of the system.

(3) D-rings and snaphooks shall be capable of sustaining a minimum tensile load of 5,000 pounds (22.24 Kn).

(4) D-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 Kn) without cracking, breaking, or being permanently deformed.

(5) Snaphooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snaphook caused by depression of the snaphook keeper by the connected member, or shall be of a locking type that is designed and used to prevent disengagement of the snap-hook by contact of the snaphook keeper by the connected member.

(6) Snaphooks, unless of a locking type designed and used to prevent disengagement from the following connections, shall not be engaged:

(i) Directly to webbing, rope or wire rope;

(ii) To each other;

(iii) To a D-ring to which another snaphook or other connector is attached;

(iv) To a horizontal lifeline; or

(v) To any object that is incompatibly shaped or dimensioned in relation to the snaphook such that unintentional disengagement could occur by the connected object being able to depress the snaphook keeper and release itself.

(7) On suspended scaffolds or similar work platforms with horizontal lifelines that may become vertical lifelines, the devices used for connection to the horizontal lifeline shall be capable of locking in any direction on the lifeline.

(8) Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms.

(9) Anchorages shall be capable of supporting at least 5,000 pounds (22.24 Kn) per employee attached, or shall be designed, installed, and used as follows:

(i) As part of a complete personal fall arrest system which maintains a safety factor of at least two; and

(ii) Under the direction and supervision of a qualified person.

(b) *Criteria for lifelines, lanyards, and personal fall arrest systems.* (1) When vertical lifelines are used, each employee shall be provided with a separate lifeline.

(2) Vertical lifelines and lanyards shall have a minimum tensile strength of 5,000 pounds (22.24 Kn).

(3) Self-retracting lifelines and lanyards that automatically limit free fall distances to 2 feet (0.61 m) or less shall be capable of sustaining a minimum tensile load of 3,000 pounds (13.34 Kn) applied to a self-retracting lifeline or lanyard with the lifeline or lanyard in the fully extended position.

(4) Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet (0.61 m) or less, ripstitch lanyards and tearing and deforming lanyards shall be capable of sustaining a minimum static tensile load of 5,000 pounds (22.24 Kn) applied to the device when they are in the fully extended position.

(5) Horizontal lifelines shall be designed, installed, and used under the supervision of a qualified person, and shall only be used as part of a complete personal fall arrest system that maintains a safety factor of at least two.

(6) Effective November 20, 1996, personal fall arrest systems shall:

(i) Limit the maximum arresting force on a falling employee to 900 pounds (4 Kn) when used with a body belt;

(ii) Limit the maximum arresting force on a falling employee to 1,800

pounds (8 Kn) when used with a body harness;

(iii) Bring a falling employee to a complete stop and limit the maximum deceleration distance an employee travels to 3.5 feet (1.07 m), and

(iv) Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet (1.83 m), or the free fall distance permitted by the system, whichever is less;

NOTE TO PARAGRAPH (b)(6) OF THIS SECTION: A personal fall arrest system which meets the criteria and protocols contained in appendix B, is considered to comply with paragraph (b)(6). If the combined tool and body weight is 310 pounds (140.62 kg) or more, systems that meet the criteria and protocols contained in appendix B will be deemed to comply with the provisions of paragraph (b)(6) only if they are modified appropriately to provide protection for the extra weight of the employee and tools.

(7) Personal fall arrest systems shall be rigged such that an employee can neither free fall more than 6 feet (1.83 m) nor contact any lower level.

(c) *Criteria for selection, use and care of systems and system components.* (1) Lanyards shall be attached to employees using personal fall arrest systems, as follows:

(i) The attachment point of a body harness shall be located in the center of the wearer's back near the shoulder level, or above the wearer's head. If the free fall distance is limited to less than 20 inches (50.8 cm), the attachment point may be located in the chest position; and

(ii) The attachment point of a body belt shall be located in the center of the wearer's back.

(2) Ropes and straps (webbing) used in lanyards, lifelines and strength components of body belts and body harnesses shall be made from synthetic fibers or wire rope.

(3) Ropes, belts, harnesses, and lanyards shall be compatible with their hardware.

(4) Lifelines and lanyards shall be protected against cuts, abrasions, burns from hot work operations and deterioration by acids, solvents, and other chemicals.

(5) Personal fall arrest systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration. Defective components shall be removed from service.

(6) Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a qualified person to be undamaged and suitable for reuse.

(7) The employer shall provide for prompt rescue of employees in the event of a fall or shall ensure that employees are able to rescue themselves.

(8) Body belts shall be at least one and five-eighths inches (4.13 cm) wide.

(9) Personal fall arrest systems and components shall be used only for employee fall protection and not to hoist materials.

(d) *Training.* Before using personal fall arrest equipment, each affected employee shall be trained to understand the application limits of the equipment and proper hook-up, anchoring, and tie-off techniques. Affected employees shall also be trained so that they can demonstrate the proper use, inspection, and storage of their equipment.

[61 FR 26352, May 24, 1996, as amended at 67 FR 44544, July 3, 2002]

§ 1915.160 Positioning device systems.

Positioning device systems and their use shall conform to the following provisions:

(a) *Criteria for connectors and anchorages.* (1) Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of this system.

(2) Connecting assemblies shall have a minimum tensile strength of 5,000 pounds (22.24 Kn).

(3) Positioning device systems shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall.

(4) Snaphooks, unless each is of a locking type designed and used to prevent disengagement, shall not be connected to each other. As of January 1, 1998, only locking type snaphooks shall be used in positioning device systems.

(b) *Criteria for positioning device systems.* (1) Restraint (tether) lines shall have a minimum breaking strength of 3,000 pounds (13.34 Kn).